

DOCUMENT RESUME

ED 359 563

CS 213 959

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TITLE A Collaborative Task Oriented Approach to Teaching
Online Documentation.
PUB DATE Mar 93
NOTE 12p.; Paper presented at the Annual Meeting of the
Conference on College Composition and Communication
(44th, San Diego, CA, March 31-April 3, 1993).
PUB TYPE Speeches/Conference Papers (150) -- Reports -
Descriptive (141) -- Guides - Classroom Use -
Teaching Guides (For Teacher) (052)
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Class Activities; College Students; *Cooperative
Learning; Documentation; Higher Education;
Hypermedia; Information Sources; *Online Systems;
Task Analysis; *Technical Writing; Technological
Advancement
IDENTIFIERS Clip Art; Team Learning Methods; Writing Contexts

ABSTRACT

This paper discusses obstacles to teaching online documentation and shares a collaborative approach to overcoming these obstacles. The paper describes three obstacles: (1) students have had limited access to online documents and hypertext systems; (2) standards and principles of effective design for online documents are not clearly established; and (3) developing online documents requires the complex integration of writing, analytical, and graphic design skills. The paper proposes a collaborative task oriented approach which draws on the variety of skills and interests of students working on various team projects. Elements of the collaborative approach described in the paper include: interaction with existing models; discovery of criteria for comparing online documents; a simple "clipart" group project; introduction to screen design; scripting hypermedia for ideal user interaction; and user testing for orientation and navigation. (RS)

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ED359563

A Collaborative Task Oriented Approach to Teaching Online Documentation

by

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abstract

In this essay, I discuss obstacles to teaching online documentation and share a collaborative approach to overcome these obstacles. First, students have had limited access to online documents and hypertext systems used to develop them. As a result, students may lack personal experience and conceptual understanding of how online documents are used and developed. Second, standards and principles of effective design for online documents are not clearly established. Students will have no historical sense of the development of hypertext and subsequent software. Third, developing online documents requires the complex integration of writing, analytical, and graphic design skills. I propose a collaborative approach which draws on the variety of skills and interests of students working on various team projects.

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A Collaborative Task Oriented Approach to Teaching Online Documentation

In the February 1992 issue of *Publish* magazine, Timothy Leary asserted in an interview that "In the 21st century, he who controls the screen controls consciousness, information and thought. The screen is a mirror of your mind. If you're passively watching screens, you're being programmed. If you're editing your own screen, you're in control of your mind" (p. 120).

Leary almost got it right., but he is still stuck in the consciousness of the individual, the idea that we can all do our own things, the notion that we all live in the fantasy of our own self-constructed reality. For Leary, it is always the self who must control. But consciousness is not an act of isolation and thought is not an act of the individual—the 21st century technologies are breaking down barriers between individuals, opening up links between cultures, connecting information from different disciplines and perspectives. And all of this is occurring online, through our linked computer screens, our worldwide networks of financial information, our worldwide interlibrary loan systems, our bulletin boards, our access to information and help through our computers, our ability to find and alter each others' screens. It is the linking and sharing of computer screens that is leading to a new global consciousness and knowledge which instantly knows about marches through Red Square in Moscow or

monitors protests and massacres in Red China or Bosnia. Instead of "he who controls" it is "we who control" the computer screens through our participation.

George Orwell got it backwards in 1984 as well—it is not big brother who is watching us, it is us watching big brother all around the world.

So the goal is not individual control and personalization of your own screen, but the linking together and developing—together—computer screens that collectively share knowledge, skills, advice, and needed information. Instead of a single author creating a story or a collection of significant information, online documentation invites multiple authors and contributors to gather and organize their shared knowledge—with the assumption that it will continually be updated and modified by those who use it in the future. The screen becomes the mirror, not of my mind, but of "our minds" trying to solve our needs and our problems.

Definition and Characteristics of Online Documentation

I define online documentation very broadly to include all documents designed to be used only on the computer screen. Online documents include software demos, tutorials, reference collections, help systems, interactive educational materials, employee training manuals, clipart collections and an ever-growing list of computer screen information delivery publications. Online documents may include a wide range of digital media including text, graphics, sound, animation, video, and screen effects which simply are not possible in traditional print media. Online documents are designed for a continuum of interaction from passive observation to co-creation of new documents after a single user session. Also, online documents also provide diverse computer aided navigational controls to assist the user in their interaction or search for specific information.

An operational definition is that online documents are (1) the integration of graphics, sound, and information (2) into pleasing computer screens never to be printed on paper (3) designed for desired levels of access and interaction by a computer user.

Background of My Teaching Online Documentation

I began teaching online documentation in 1989 within Purdue University's technical writing program as part of a computer aided publishing course. Most of the students were creating computer documentation manuals as publishing projects, and they had become familiar with HyperCard (primarily as a means of gathering clip art but also through the example of HyperCard's own help tutorial). We discussed the problem of computer documentation quickly becoming obsolete and the problem of keeping printed manuals available. (Most of us in academic computer labs or corporate environments know how often manuals disappear.) We discussed the advantage of integrating documentation into the software itself as a means of solving both dilemmas, and we spent considerable time examining existing online help packaged with commercial software.

A few brave students jumped into the production of online documentation projects, using HyperCard and screen shots to create tutorials, software demos, or general Macintosh operating process instruction. As I observed their efforts and evaluated the results, I realized that it was too much for them to tackle alone. One student was excellent at organizing information and concisely instructing users, but had a very poor sense of screen design aesthetics. None of the students could script their stacks without extensive help from me. User testing showed how complex simple screen oriented interactions such as pointing or prompting navigational help can be. In general, these online projects were incomplete failures because they were limited to the capability of

the individual student trying to control his or her own screen. I realized that the tasks and skills necessary to go online with even simple documentation projects were quite complex and demanding. I also realized that we needed a full semester class devoted to online documentation, if students were going to have time to learn the basics of using and developing their own online documents.

For the last three years I have been directing the writing major at Millikin University which has given me the opportunity to advise several online documentation projects, and to develop and offer the online publishing course for the first time last spring. The course allows students to propose and develop online documentation projects appropriate for a wide range of majors including technical writing, creative writing, management of information science, computer programming, public relations, and education. At Millikin the course usually consists of writing majors, public relations majors, and a few education majors.

My subsequent collaborative approach to teaching online documentation is a result of this initial classroom experience. In the rest of this essay, I want to share my views about obstacles to teaching online documentation, and the collaborative approach I have developed in an attempt to overcome these obstacles.

Obstacles to Teaching Online Documentation

Several obstacles must be overcome in order to effectively teach online documentation. First, students have probably had limited access to online documents and hypertext systems used to develop them. As a result, most students will lack personal experience and conceptual understanding of how online documents are used and developed.

Second, no standards or principles of effective design for online documents are clearly established. Students will have no historical sense of how to use online documents, much less any understanding of the process of developing hypertext, hypermedia, multimedia and other variations of screen oriented online documents. In the absence of conventions, each online document must establish its own user orientation and provide clear prompts for appropriate interaction by cueing available navigational controls.

Third, developing online documents requires the complex integration of skills: the integration of rhetorical skills, computer scripting abilities, analytical capabilities, and an understanding of graphic design. Such diverse capabilities and skills rarely exist within an individual, which is why most online documents are produced by teams, collaborating to develop an online document for a wide range of possible users.

A Collaborative Task Oriented Approach

To overcome these obstacles, I propose a collaborative task oriented approach to teaching which draws on the variety of skills and interests of students working on progressively more complex online documentation projects. By task oriented, I mean that students learn by doing specific tasks together, then reflecting on those tasks.

(1) *Interacting with existing models.* I begin the course by exploiting the student's lack of experience or knowledge about online documentation. The student teams try out several software demos, tours, educational stacks, public relations software, tutorials and online help systems related to the computer equipment and software they will be using. We have a large collection of such publications gathered through CDs of public domain software and commercial documents we have acquired through a grant to develop a computer writing classroom at Millikin University. At first, we simply discuss these online publications through our intuitive reactions and responses to their

use.

Which ones did we enjoy using most? Why?

Which ones seemed most useful to someone seeking specific information such as
how to set a tab leader in a word processing document?

How would you classify the range of online publications available?

Which online publications seemed more appropriate for the computer screen and
which ones would be better in printed media?

Which ones allowed you to control your interaction or not?

This informal examination of a wide variety of examples is an extremely important starting ground for the students. It alters their conception of the computer as a word processing or game machine. They begin to understand the possible roles the computer may take such as tutoring, teaching, selling, or providing information to users. It helps the students become oriented to general patterns of screen design and common methods of prompting user navigation, such as Boolean search procedures. The informal examination allows students to become comfortable with this new type of sharing control of the computer screen.

(2) *Discovering Criteria for Comparing Online Documents.* After examining several examples, the students begin to classify and establish criteria for effectiveness for various types of online documents. While they are discovering criteria for comparing online documents, I begin to introduce more formal discussions and research on online documentation. Overall, we discuss the range of online documents, their varying levels of interaction, and we begin to establish criteria for comparing their effectiveness. The emphasis during this phase of instruction is on the user and different levels of interaction provided by various online documents. Students note their own responses

and questions to models, and they observe each other or bring in even less experienced users to observe.

Teams are formed around a collaboratively proposed online document project they would like to develop. The proposal requires not only an explanation of the broad goals of their document and the intended users, but also an analysis of similar or related online documents—as a means of establishing the criteria appropriate for evaluating the effectiveness of their project. The proposal requires a general team strategy or delegation of responsibilities among the team members. The proposal also requires a general plan for acquiring needed information (text, graphics, sound bytes, etc.) to be included in the document. Finally, the proposal also includes a time schedule for managing the development of the online document, including user testing and concluding with a group presentation of the project and its development given at the end of the semester.

(4) *A Simple ClipArt Group Project.* As a means of acquiring more skills with the process of designing and scripting online documents, each group creates an online clipart collection of graphics related to their group project. Creating their own clipart collection is an excellent task for the group, because they will have to search and use several online clip art collections in their search for appropriate graphics for their project. As a simple online document, students can easily master the basics of placing and manipulating graphics, creating indexes of text, and scripting simple navigational controls. Creating their own clipart collection also provides a task-oriented means for learning the basics of online screen design.

(4) *Introduction to Screen Design.* Inevitably students have begun responding to the layout and appearance of screen design in various online documents. They intuitively

know that some online documents appear cluttered and confusing, while others are easy to read or even enjoyable to look at. Through a formal analogy to page design conventions, I encourage the student development teams to generate principles for good screen design such as chunking and labeling information into small amounts, integrating graphics and text, allowing space on the computer screen to frame clusters of information, and maintaining simplicity through the repetition of screen elements and their placement.

We discuss the importance of establishing document conventions—extended metaphors that allow the user to employ appropriate mental models of interaction throughout the online document. We note that most online documents convey this metaphor through a template or background with related icons to prompt interaction. By consistently maintaining the general arrangement of screen elements throughout a document, we allow the user to focus on the changing elements on the screen instead of continually reorienting to another screen design.

Although not all groups agree, I emphasize a bare bones approach to design: less is more, simplicity is beauty, and if the function is not easier to perform online then it should not be online. Form follows function or at least reinforces function.

At this point in the project, each team sketches out dummy screens and story boards of their online documents, and as a group they establish necessary screen design background plans. They organize these possible screens into a map of possible user interaction, which forces them to consider issues such as first time users who need more orientation than repeat document users. Each team agrees on the desired level of user interaction and what icons or prompts will be provided to guide the user through the

online document. They should be well into their collection process of gathering needed materials to be included in their online document.

I require a progress report which includes sketches, a map of possible user interaction, a review of collected materials, and an evaluation of team management. This formal progress report becomes a simple checking device for me, but it also keeps the team from delaying or putting off expected progress. Dysfunctional teams become immediately apparent in poorly completed progress reports, which allows me to immediately intervene or aid in the reconfiguration of the project before it is too late.

(5) *Scripting Hypermedia for Ideal User Interaction.* Each team consists of a mix of students who probably bring different abilities to the development project. Online documents do require some programming (or scripting) in order to customize them for appropriate user interaction. These scriptors are responsible for the document's navigation and search capabilities. Hopefully, there will be one or two students on each team who want to learn how to control the hypertext software being used for the project. Computer programmers often do not have empathy with users, especially novice users who bring few expectations to the computer. The team will need someone who wants to learn some programming—often called scripting in authoring and hypermedia development software, and the team will need someone who is never really comfortable with the computer at all.

Scripting requires an understanding of the software being used to develop the online document as well as an understanding of the variety of users who may be attempting to use the finished publication. For example, in HyperCard, the scriptor must anticipate the user's actions, then he or she must understand how the computer software will process those actions. The technical knowledge of how information moves between:

different screen objects or through levels of the stack will help the scriptor control what happens in different user situations. In the past, this lack of empathy for user perspectives, led to error messages and pop up windows that were often insulting or unnecessarily alarming: FATAL ERROR! A simple beep and lack of other result may be enough to discourage undesired user actions.

(6) *User Testing for Orientation and Navigation.* The course concludes with the completion of their prototype online documents which are tested with various users. For this introduction to user testing, the groups especially observe the orientation process (how users get started and discover how to interact with the online document). Second, they observe the user's navigation through the document and note needed improvements. The online documents are adjusted and revised as needed to complete the project, then each group presents not only the "final" version (waiting for future modification from users) and also discuss difficulties and problems they had to overcome in order to develop their publication. In this final class collaboration, they all share their newly acquired skills, goals, frustrations, and understanding of this development process.

Hopefully, they have moved into the collaborative construction of knowledge and publishing of the future—we who control the interactive computer screen share in the construction of our collective consciousness, our shared knowledge and skills.

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